CYSTICERCOSIS
A CASE REPORT

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Human infestation with cysticerus cellulosae, the larval stage of Taenia solium—the
pork tapeworm—has been a rare recurrence in the United States. It has, however, been en-
countered frequently in British troops who have served in the Middle East and India where
the parasite is common. Inasmuch as many men will be returning to the United States who
have been stationed in such areas, the disease may be encountered more frequently. It seems
timely, therefore, to report a case of cysticercosis in which the manifest symptoms resulted
from involvement of the central nervous system and in which surgical treatment was of
benefit.

CASE SUMMARY

A 31-year-old soldier with 2½ years’ service was admitted to a general hospital on 6
January 1944 complaining of headaches and difficulty in seeing. He had arrived in Egypt in
the summer of 1942. He was well until about 1 November 1942 when, after a severe sand-
storm near Benghazi, Libya, he developed a severe headache and blurring of vision. He was
admitted to a hospital where he remained for approximately 15 days. Hot applications were
used on his eyes, and he was discharged feeling as though he had completely recovered. During
the next 11 months he had intermittent headaches. These were not severe, and he performed
full duty with an air force service group. In December, 1943 he had chills and fever, and he was
told that he had malaria. At this same time his headaches became severe, his vision was
blurred, and he developed diplopia on distant gaze. These symptoms persisted until his ad-
mission to the hospital on 6 January 1944.

His family history was negative. His past history was noncontributory. He was a native
of Louisiana and had lived in New Orleans most of his life.

Examinations. On admission blood pressure was 135/70, temperature 98.6, and pulse 70.
The heart and lungs were normal to percussion and auscultation. The abdomen was soft.
The spleen and liver were not palpable. The rectal examination was negative. The musculo-
skeletal system was normal.

Neurological examination revealed bilateral choked discs of 2 diopters. There was a hemor-
rhage in the right fundus. Vision was: VOD 20/20; VOS 20/20. There was a slight paresis
of the right VI cranial nerve. The visual fields were normal. All other cranial nerves were
normal. The reflexes were all equally active. The Babinski and Hoffmann signs were negative.
There was a slight increase in the release reaction of the right arm. There were no motor or
sensory abnormalities. The sedimentation rate (Wintrobe) was 3 mm. in one hour.

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\begin{align*}
RBC &= 4,200,000 \\
Hbg &= 14.5 \text{ grams} \\
WBC &= 5,000 \\
\text{Diff. (200 cells)} &= \text{N = 51, L = 40, E = 7, M = 2} \\
\end{align*}
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No parasites were noted in the blood smear. The urinalysis was negative.

X-ray examination of the skull revealed a marked erosion of the posterior clinoids (Fig. 1).
The sella turcica was almost entirely decalcified. The pineal gland was calcified and in normal
position. There were two small calcified masses, each measuring about 1 x 1 mm. One of
these lay several cm. posterior to the pineal body and the other high in the parietal lobe
(Fig. 1).

X-ray examination of the lungs revealed several small calcified mediastinal areas which
were considered to be calcified nodes.
Fig. 1 (left). Erosion of the posterior clinoid processes. Arrows indicate two small areas of calcification. Marked decalcification of the sella turcica is present.

Fig. 2 (right). Ventriculogram demonstrating slightly enlarged lateral ventricles and cyst outlined by arrows.

On 18 January 1944 a ventriculogram under local procaine anesthesia was carried out. Both lateral ventricles were moderately dilated. The anterior horn of the right ventricle was pushed upward and the third ventricle was compressed posteriorly. A cyst-like mass was noted on the lateral view (Fig. 2), above and slightly posterior to the anterior clinoid process on the right side.

Operation. On 19 January 1944, under gas-oxygen-ether anesthesia administered by the intratracheal route, a right frontal flap was turned down. The dura was incised and the under surface of the right frontal lobe was retracted until the right optic nerve came into view.

Fig. 3. Cysticercus cellulosae (low power).
Just lateral to it, and seemingly extending posteriorly and inferiorly beneath the right optic tract and the optic chiasm, there was a cyst with a thin, moderately transparent membrane. The membrane was punctured and a large quantity (possibly 1 oz.) of clear, colorless fluid was evacuated. Along with the fluid, numerous small pieces of gelatinous, mucoid material appeared. The largest measured approximately $1 \times 3$ cm. The cyst cavity appeared to extend down to the floor of the sella turcica and also a few cm. posteriorly. As much of the cyst wall as could be visualized was removed, and all mucoid material and fluid were sucked out. The dura was closed with silk, the bone flap replaced, and the scalp closed in layers with silk.

*Histological Diagnosis:* Cysticercus cellulosae (Fig. 3).

*Course.* X-rays of the extremities and abdomen revealed scattered calcified cysts in the lower extremities (Fig. 4) and several in the abdominal cavity.

His postoperative course was satisfactory. The papilledema disappeared, and on 15 March his general and neurological examinations were negative, and he was returned to limited duty. An encephalogram revealed the lateral ventricles still dilated, but the deformity due to the cyst had disappeared.

He was reexamined in September, 1944, nine months after his operation, as he was returning to the United States on the rotation plan. At this time he stated that he had been doing regular duties with his service group and had felt well. There had been no visual disturbances and no headaches. His companions stated that he had been perfectly normal mentally. On several occasions he had slight vertigo while working in the hot sun during the summer, but this had not bothered him.

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**Fig. 3.** The cyst with a thin, moderately transparent membrane.

**Fig. 4.** Lower end of the femur demonstrating calcified larvae.

**Fig. 5.** Nine months postoperative. There has been a marked recalcification of the sella turcica.
The general and neurological examinations were essentially negative. X-ray examination revealed complete recalcification of the sella turcica (Fig. 5).

**COMMENT**

The original infestation in this case probably took place in the United States inasmuch as calcification of other larvae was present at the time of operation, which was only about 18 months after his arrival in Egypt. As a general rule calcification does not occur for from three to six years after infestation.

The diagnosis was not made preoperatively. On review of the x-ray films of the chest the calcified areas noted in the mediastinum are still indistinguishable from calcified nodes.

The patient gave no history of symptoms suggestive of the disease. This is not uncommon as the tissues are quite resistant to live larvae, and it is only after they die that a more intense local reaction occurs. If there are subcutaneous lesions, a common occurrence, the presence of palpable pea-sized nodules together with recovery of the adult worm in the stool makes the diagnosis evident. In their absence, however, diagnosis is difficult until calcification has occurred.

The cyst presenting was associated with the leptomeninges. It was impossible to accomplish the ideal, the removal of all the cyst wall, because of its inaccessibility. Inasmuch as there had been no evidence of recurrence nine months after operation, it is assumed that this particular cyst has been eradicated. When convulsions or other signs of central nervous system disease develop in an adult who has served with the armed forces in the Middle East and India, a diagnosis of cysticercosis must seriously be considered.

**SUMMARY**

1. A case of cysticercus cellulosae of the brain is presented with surgical removal and with no evidence of recurrence nine months afterward.
2. Inasmuch as many men will be returning from foreign soil where Taenia is prevalent it is important to keep this condition in mind when signs and symptoms of central nervous system disease develop.

**REFERENCES**


**A NEW POSITION FOR FRONTAL CRANIOTOMY***


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Recently in considering the surgical exploration of the circle of Willis for a suspected aneurysm, it seemed worth while to try a new method of approach in the hope of improving

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